The Climate Engine

An Overview

2023

Executive summary

The Paris Agreement, signed in 2015, calls for limiting global warming to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increasing by 1.5°C. To achieve this goal, companies need to reduce their greenhouse gas emissions and align their business strategies for a net-zero future. By using the in-house Climate Engine, our investment team can identify companies making progress towards net-zero, and the resulting portfolio can improve the emissions intensity, mitigate transition risks, and capture new opportunities in the investment landscape. The integration of ESG and climate data opens a new era for portfolio management, and the Climate Engine captures this new era with a multi-dimensional portfolio construction methodology.

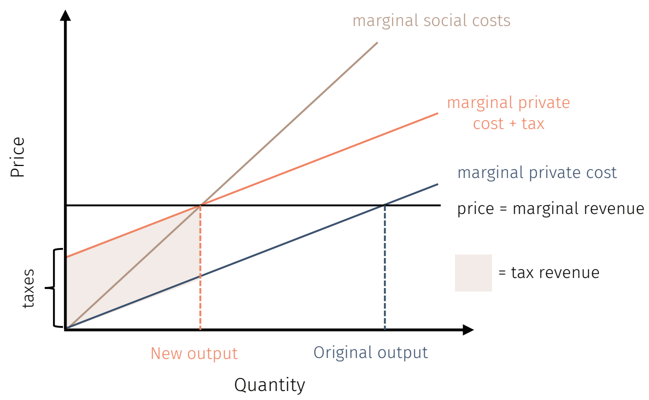
Introduction

The global transition to a net-zero economy is essential for mitigating the catastrophic impacts of climate change. The Paris Agreement sets out a framework for achieving this goal, but there is a need for a tool that can help investors assess progress towards net-zero emissions. The Climate Engine uses linear regression in combination with qualitative data such as targets to calculate net-zero alignments for companies. The combination of both quantitative and qualitative data enables a holistic view of a company's climate alignment, ensuring that companies are committed and executing emissions reduction in line with those promises. The Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report concludes without doubt that climate change is a direct result of human behaviour. Most scientists also agree that the negative effects of not acting on climate change will have catastrophic impacts. The financial sector is increasingly aware of the issues posed by climate change, but there are also a number of opportunities in this space.

While regulation and levies could have an adverse effect on polluting assets, they may also have a positive impact on green assets. A carbon levy could work as a Pigouvian Tax[1], a system where adjustments for negative externalities are adjusted for (Figure 1). This could be positive for green products and production systems which today may not be fully reflected in the valuation of companies.

The Climate Engine applies a comprehensive approach to take advantage of the opportunities that arise in this paradigm shift, maintaining the forward-looking risk management of carbon liabilities while not limiting the investable universe in terms of sector exposure.

Figure 1: Pigouvian Tax regime



Source: Wikimedia

Climate Engine Methodology

Automated Assessment

The Climate Engine uses linear regression to estimate the alignment to the Paris Agreement of companies. The model considers a range of variables, including Scope 1 and 2 emissions, revenues, sectors and emission reduction targets. The model is based on carbon intensity which is the ratio between emissions and revenues. We believe that carbon intensity has some strengths over a model based on absolute emissions. For example, an intensity model can adjust for revenue growth with sustained emissions, meaning that a company became more efficient in its production. It also makes sure that M&A and other corporate events do not have a negative impact on the climate alignment *per se* which otherwise could happen.

Firstly, the Climate Engine establishes a baseline emissions intensity for each company, based on historical emissions data. Secondly, it then calculates the carbon intensities for each year. Finally, it uses linear regression to estimate the rate of emissions reductions required for the company to achieve net-zero emissions by 2050. The result for each company is compared to the respective sectorial decarbonisation path to assess the feasibility of achieving net-zero emissions within the required timeframe. The sector decarbonisation path is a forward-looking trajectory of the carbon intensity and is evaluated in relation to the corresponding sector decarbonation pathway created by Science Based Targets[2].

Qualitative assessment

In some cases, the automatic assessment is not possible. This could be, for example, due to a lack of time series of

[1] https://taxfoundation.org/tax-basics/pigouvian-tax/#:~:text=A%20Pigouvian%20tax%2C%20named%20after,sugar%20taxes%2C%20and%20carbon%20taxes

[2] SECTORAL DECARBONIZATION APPROACH (SDA), Science based targets https://sciencebasedtargets.org/resources/files/Sectoral-Decarbonization-Approach-Report.pdf

carbon emissions, or because a company recently took strong action which is not reflected in historical data as emission data usually lag by at least one year. For these exceptional cases the Climate Engine leverages on an internal checklist based on best practices to qualitatively assess a company's alignment to net-zero. Having a target is a necessity but far from the only data point that is considered. The checklist itself is a weighted questionnaire of roughly 20 items which help determine if a company can be considered to be net-zero.

Conclusion

The Climate Engine provides a tool to assess companies' progress towards net-zero emissions and enables informed investment decisions. By using the Climate Engine, our investment team can identify companies that are making progress towards a net-zero future. The resulting portfolio can provide a significant and measurable improvement of the emissions intensity, thus mitigating transition risks while also capturing new opportunities in the investment landscape.

The transition to a net-zero economy requires a concerted effort from all stakeholders, including companies and investors. The net-zero model presented in this whitepaper provides a tool for assessing progress towards net-zero emissions and making informed investment decisions. By using the Climate Engine, investors can support companies that are committed to a net-zero future and drive the transition to a more sustainable economy.

Multiple challenges persist:

Data availability is arguably the biggest challenge, particularly for emerging markets, small caps and private companies. Furthermore, the climate revolution comes with a cost for many small and medium firms - the need for improved climate (and ESG) data represents an additional burden that will put additional pressure on margins. Whereas the quality of data is also problematic due to different reporting systems and lack of reporting obligation. Very often ESG data are also un-audited Improved conceptual frameworks are also needed to better attribute and measure Scope 3 emissions as they are fundamental to correctly measure the impact of products and companies. Existing solutions such as PACTA webtool, ESG Book initiative or benchmarks that provide a guide to emission reductions trajectories offer useful guidance and support.

It is clear that the integration of ESG and climate data opens a new era for portfolio management. While the risk premium for smaller or emerging companies might increase due to their limited transparency, it is too early to judge to what extent the efficient market hypothesis will be challenged. Clearly it enters in a new phase and investors will have to seriously consider how much of the information in their hands is already discounted by markets. Investment managers will be confronted with new problems at the border between ethics and financial materiality that will be difficult to judge but rewarding to solve.

Sources that may be useful for further reading on the topics discussed in this text include:

The Paris Agreement - official website of the United Nations Framework Convention on Climate Change (UNFCCC) https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

Science-Based Targets - an initiative that helps companies set science-based targets to reduce greenhouse gas emissions https://sciencebasedtargets.org/

IPCC (Intergovernmental Panel on Climate Change) - the leading international body for the assessment of climate change https://www.ipcc.ch/

PACTA (Paris Agreement Capital Transition Assessment) - a webtool that assesses alignment with the Paris Agreement for financial portfolios https://2degrees-investing.org/resource/pacta-paris-agreement-capital-transition-assessment/

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